THE

April, 1959

CHEMIST

VOLUME XXXVI



NUMBER 4



-Fabian Bachrach

Dr. Foster Dee Snell

Receives Honorary AIC Membership (See page 123)

NEW

Low-cost PYREX brand burettes

Now buy only the accuracy you need . . . at a price that makes sense

These new Pyrex brand Accu-Red Burettes are priced at 38% less than our precision (certified) models Nos. 2130 and 2131.

But they provide all the accuracy you need for many tasks that do not require extreme precision. For example, tolerance on the 25 ml size is ± 0.06 ml.

Moreover, the low price does not mean any sacrifice in quality. You still get all the advantages of labware carefully crafted from PYREX brand glass No. 7740; no worries about corrosion or contamination.

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You can get these new burettes in 10, 25, 50 and 100 ml sizes . . . with Accu-RED or white markings. Either type is the answer to your accuracy—at-a-price—need in quality labware.

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Specify 'Baker Analyzed' Reagent Acid in these functional, time-saving Thro-A-Way bottles and cases and you save labor: Thro-A-Ways are easy to open, easy for one man to stack. You save space: Thro-A-Ways store in less room, no space is

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NEW! NITRIC ACID PERCHLORIC ACID

IN FOAM CUSHIONED CASES

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6 FIVE-PINT BOTTLES PER CASE

A lightweight, rugged case which permits storage of 18.5% more acid in same amount of space. Easy to lift, easy to open: slit center tape, raise flaps, lift out bottles. Double-wall construction of bottle nests protects against breakage. 18" x 12%" x 14" corrugated, 1.0°C. approved.

12 ONE-PINT BOTTLES PER CASE

Easy to grasp, 1-pint bottle fits your hand, opens in a jiffly, eliminates refilling of shelf bottles from heavy bulk containers. Strong, sturdy lightweight case, easy to lift and stack. 13% x 11½ x 9° corrugated, I.C.C.

6 FIVE-PINT, OR 12 ONE-PINT BOTTLES. SPECIAL FOAM-CUSHIONED CASES.

Extra-protective, light-weight, shock-absorbing, easy-to-open cases with both expanded polystyrene inner core and cushion-separators for extra safety. Convenient Thro-A-Way bottles. 6 live-pint bottle case. 18½ x 12½ x 12½ 12 one-pint bottle case, 15 x 8 ½ x 11½ x 11½ both 1.C.C. approved.



J. T. Baker Chemical Co.
Phillipsburg. New Jersey

The CHEMIST

Reg. U. S. Pat. Off,

Publication of THE AMERICAN INSTITUTE OF CHEMISTS, INC. 60 East 42nd street, New York 17, N. Y.

Entered as second class matter April 8, 1936 at the Post Office at New York, N. Y., under Act of August 24, 1912. Second class postage paid at New York, N. Y. Issued monthly.

Subscription price, \$2.00 a year to Members, \$3.00 to Non-Members. Single copy, this issue, \$0.25. Copyright, 1959 by The American Institute of Chemists, Inc.

Vol. XXXVI

April, 1959

Number 4

THE AMERICAN INSTITUTE OF CHEMISTS

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Deadlines for THE CHEMIST: For the May issue the deadline is April 15.

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

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TO COME IN MAY

Dr. Lloyd A. Hall, who received Honorary AIC Membership recently, presents, "Catalyst for Better Living." Marlin G. Geiger, executive vice president of W. R. Grace & Co., addressed the New York AIC Chapter on "Achieving Success on the Job — Exploiting our Abilities." Every employed person should read it with profit.

Recommended Suppliers and Services

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The 36th Annual Meeting The American Institute of Chemists

MAY 7-8, 1959

TRAYMORE HOTEL, ATLANTIC CITY, N. J.

The Thirty-Sixth Annual Meeting of The American Institute of Chemists has been planned to emphasize the importance of the chemist and the engineer in the economy of our country. The theme of this meeting is

THE CHEMIST AND ENGINEER IN THE ECONOMY

We have brought together speakers from our own ranks, our government, our universities and industry, to stimulate the kind of discussion which members of the AIC always look forward to at their annual meetings.

From these discussions, we wish to call your attention to:

1. National Progress Through Chemistry.

2. The Importance of Industrial Research to the Economy.

3. Scientific Training in the Economy.

This meeting will be held at The Traymore Hotel, Atlantic City, N. J. Because of its convenient location and accessibility by auto, bus and plane, we hope to draw a record attendance from all chapters—and don't forget to bring your wife. We have arranged a

Ladies' Program

to make their stay in Atlantic City more enjoyable. They are welcome to join us at the coffee hours, luncheons, and the Gold Medal Award Banquet. Other activities are listed in the program.

PLAN TO COME TO ATLANTIC CITY ADVANCE REGISTRATION AND PREPAYMENT ARE REOUESTED

PROGRAM

Wednesday, May 6, 1959

(For National Council and Annual Meeting Committees)

4:00 to 5:30 p.m. Registration. (Main Lobby)

5:30 p.m. The President's Reception to the Officers, National Councilors, Members of the Annual Meeting Committee, and their wives (Belvedere Room, 11th floor.)

6:30 p.m. Dinner meeting of the Board of Directors, Council and Annual Meeting Committee. (Belvedere Room, 11th floor) (Pay at table)

NOTE: See Ladies' Program for wives of those attending this dinner.

Thursday, May 7, 1959

9:00 a.m. to	Registration — Mai Pre-Registration		Registration	at	Door
5:00 p.m.	AIC Members Non-Members Students (There is no registration	\$5.00 \$6.00 \$1.00 fee for wives	AIC Members Non-Members Students of registrants)		\$6.00 \$7.00 \$1.00

9:00 a.m. Coffee Hour. Sun Deck. (No charge)

10:00 a.m. Annual Business Meeting. (Belvedere Room, 11th floor)

Notice

The Thirty-Sixth Annual Business Meeting of The American Institute of Chemists will be held at the Traymore Hotel, Atlantic City, N. J., at 10:00 a.m. on Thursday, May 7, 1959, for announcement of the election of a president-elect and councilors, and for such other business as may be properly presented.

— Lloyd Van Doren, Secretary

Agenda

Report of the President, Dr. Emil Ott
Report of the Chairman of the Board, Dr. Henry B. Hass
Report of the Treasurer, Dr. F. A. Hessel
Report of the Secretary, Dr. Lloyd Van Doren
Reports of the Committees
Reports of the Chapters
Announcement of the election of president-elect and Councilors.
Old business
New business

12:15 p.m. Keynote Luncheon (American Room) (Tickets \$5.00)

Presiding, Dr. Emil Ott, Vice President, Chemical Divisions, Food Machinery & Chemical Corp., and AIC President Speaker, The Hon. Robert B. Meyner, Governor, State of New Jersey Subject: "The Importance of New Jersey Industries in the Economy."

2:00 p.m. First Professional Session (Rose Room)

Theme: National Progress Through Chemistry.

Presiding: Dr. W. E. Kuhn, General Manager, Research and Technical Dept., The Texas Co., and incoming AIC President.

2:10 p.m. Research in Government and Industry

Speaker: Lt. General James M. Gavin (Retired), Executive Vice President, Arthur D. Little, Inc.

2:50 p.m. The Chemist and World Economy

Speaker: Dr. R. H. Rowntree, Chief, Economics Division, Export-Import Bank of Washington

3:30 p.m. The Changing Character of Chemical Research in Government

Speaker: Dr. Edward Wichers,
Associate Director of the National Bureau of Standards

4:10 p.m. The Chemist and National Defense

Speaker: Major General Marshall Stubbs,

Chief Chemical Officer, Department of the Army

- 4:50 p.m. General Discussion
- 6:00 p.m. Reception for the Gold Medalist (American Room)
- 7:00 p.m. Gold Medal Banquet (American Room) Tickets \$10.00

(Dress Optional, Black Tie for Dais)

Toastmaster: Dr. Emil Ott, Vice President, Chemical Divisions, Food Machinery & Chemical Corporation

Presentation of the Gold Medal: Dr. Ray P. Dinsmore, Vice President

Research & Development, The Goodyear Tire & Rubber Co.

Medal Acceptance Address: Mr. Crawford H. Greenewalt, President

E. I. du Pont de Nemours & Co., Inc.

Friday, May 8, 1959

- 8:00 a.m. Council Breakfast. For AIC Officers and Councilors (Club Room) (Pay at table)
- 8:00 to 10:00 a.m. Coffee Hour, Sun Deck. (No charge)
- 9:00 to 2:00 p.m. Registration. Main Lobby
- 9:10 a.m. Second Professional Session (Rose or Belvedere Room)

Theme: The Importance of Industrial Research to the Economy Presiding: Dr. Cecil Brown, Manager, Scientific Liaison, Esso Research & Engineering Co.

9:20 a.m. The Growth of Research and Its Consequences to the Economy

Speaker: Dr. Carl F. Prutton, Executive Vice President, Food Machinery & Chemical Corp.

10:00 a.m. The Chemist and Engineer in the Development of Plastics

Speaker: Dr. Robert W. Cairns,
Director of Research, Hercules Powder Company

- 10:40 a.m. Industrial Research—Facts and Finance
 Speaker: Dr. Augustus B. Kinzel,
 Vice President—Research, Union Carbide Corp.
- 11:20 a.m. Research: Insurance for Tomorrow
 Speaker: Dr. W. E. Hanford, Vice President for Research &
 Development, Olin Mathieson Chemical Corp.
- 12:30 p.m. Institute Luncheon
 Presiding: Dr. Henry B. Hass,

 Past President and Chairman of the Board, AIC

 Announcement of Honorary Membership Awards for coming year.

 President's Address: Dr. Emil Ott

ANNUAL MEETING PROGRAM

2:15 p.m. Third Professional Session
Theme: Scientific Training for the Economy
Presiding: Dr. B. D. Van Evera,
Dean for Sponsored Research, The George Washington University

2:25 p.m. The Challenge of Russian Education
Speaker: Dr. Raymond Ewell,
Vice-Chancellor for Research, The University of Buffalo

3:25 p.m. American Education Meeting the Soviet Challenge
Speaker: Dr. William E. Stevenson, President, Oberlin College

4:30 p.m. Adjournment

Ladies' Program

Wednesday, May 6, 1959

5:30 p.m	President's Reception (Belvedere Room, 11th floor
6:30 p.m.	Dinner at Hackney's, Dutch Treat (Transportation provided)
8:45 to	
9:30 p.m.	String Ensemble, Main Lobby (No charge)

Thursday, May 7, 1959

- 9:00 a.m. Coffee Hour. Sun Deck. (No Charge)

 10:00 a.m. Opening of Ladies Hospitality Headquarters (Fountain Room)

 Coffee Klatsch (No charge) (Ladies Purse Perfume through the courtesy of Shulton, Inc., to all ladies who visit Ladies Headquarters during the meeting.)

 10:30 a.m. Shopping On Your Own.

 12:15 p.m. Keynote Luncheon (See general program.)

 2:30 to 5:30 p.m. Swimming Party (No charge)
- 3:00 p.m. Visit to Fischer Greenhouses
 (Fischer specializes in African violets.)
 6:00 p.m. Gold Medal Reception and Banquet

(See general program.)

8:45 to 9:30 p.m. String Ensemble (Main lobby.) (No charge)

Traymore's beautiful Indoor Pool. OR

Friday, May 8, 1959

- Coffee Hours, Sun deck (No charge) 8:00-10:00 a.m.
- 10:00 a.m. to 12:00. Swimming Party (No charge)
 - Traymore's Pool. OR
- 10:00 a.m. Visit to Lenox China Showroom and Factory. (No charge)
 - Current China patterns will be seen. Museum pieces will be on display and showroom hostess will give history of these pieces. Guests free to browse and make purchases.
- 12:30 p.m. Institute Luncheon
 - (See general program.)
- 3:00 p.m. "Togetherness" (Submarine Room.) (Pay as you go)

Please Note

Reservations for hotel rooms should be sent immediately and directly to the Traymore Hotel or to the Madison Hotel, if you prefer. The Hotel Runnymede is closed for renovations.

It is important that advance registration and payment be received by Thursday, April 30, 1959, so that adequate accommodations can be provided. Tickets will be held in your name at the Registration Desk. Please request reservation forms from THE CHEMIST, if you do not receive them in the mail by April 10. Please make all checks payable to Chester A. Amick.

Two and one-half hour express bus service to Atlantic City begins at the Port Authority Building, 8th Avenue and 41st Street, New York City. Both the Public Service and Lincoln Bus Companies maintain an hourly express bus service. A bus leaves New York City every hour on the hour from 8:00 a.m. to 8:00 p.m. Service from Atlantic City is the same.

Annual Meeting Committees

- General Chairman
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- Program Committee Dr. W. E. Kuhn (Ex-officio) The Texas Co.
- Chairman of Arrangements Dr. Joseph Dusenbury Textile Research Institute
- Chairman, Committee on AIC
- Registrations Chester A. Amick
- American Cyanamid Co.

- Chairman, Public Relations Richard L. Moore
- W. R. Grace & Co. Hospitality Committee
 - (a) Chairman, New York AIC Chapter George F. Foy Shulton, Inc.
- (b) Chairman, New Jersey AIC Chapter Dr. Lawrence T. Eby **Enjay Company**
- Ladies Headquarters
 - Co-Chairmen: Mrs. John Kotrady
 - Mrs. Maurice Kelley Mrs. Richard Moore

EDITORIAL

A Challenge to Professionalism

SCIENCE and technology progress because individuals, intellectually trained and working in a suitable environment, build upon the base of known facts to discover, combine, and coalesce new knowledge with the old, while their results continuously change our ways of living.

The trained and gifted individual is the key to this whole picture of scientific progress, whether in industrial or academic research. Science offers to chemists high mental stimulation and great personal challenge. Their training, their vision, their obligation to the profession, their intellectual activities, all mark them as apart from those who do routine prescribed work. They are professional persons. They need mental freedom to develop their abilities, and they require the prestige, the opportunities, the financial reward, due a professional.

The AIC was founded to give recognition to the professional needs of the chemist and chemical engineer. In recent years, other societies have joined in this rewarding effort.

In contrast, an organized campaign is being planned to work in the opposite direction. We quote from Chemical & Engineering News (Jan. 19, 1959) which reports a decision of certain labor leaders that:

Unions must push the idea that industrial scientists and engineers are no longer professionals. Because they are so numerous, they are now mere employees and need the powers of collective bargaining . . . Professional society activity must be countered by an educational program that shows membership in a trade union is not unprofessional.

This statement violates professional thinking. The first sentence proposes "industrial scientists and engineers are no longer professionals." The last phrase says "membership in a trade union is not unprofessional." This is double talk, and will not be appreciated by the vast majority of chemists and chemical engineers. Also, our profession does not differentiate in degree of professionalism of academic and industrially employed members of the profession.

Our profession recognizes that many union activities have been help-ful to the union membership. It sincerely wishes trade unions continued success. However, it is equally sincere in its conviction that the trade union approach is not the best approach to our objectives.

It is recognized that not all members of our profession share this conviction equally strongly. This is natural since individual variations are to be expected in a professional group. Individualism is recognized with professional pride and tolerance. It is one of the very reasons why unionization does not fit the profession.

Increased interest and participation in the work of our professional societies is the key to personal satisfaction and to the growing strength of our profession. While our spiritual strength is of utmost importance it cannot entirely overcome financial weakness. Increased financial participation by our membership is also needed.

Special AIC Announcements

The Gold Medalist for 1959

Crawford H. Greenewalt, F.A.I.C., president, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., will receive the Gold Medal of the AIC at our 36th Annual Meeting. He is cited as "an effective advocate of independent universities for the education of chemists and stanch supporter of professional worth and dignity."

The presentation will be made by Dr. Ray P. Dinsmore, Hon. AIC, chairman of the Medal Award Committee, at the Gold Medal Banquet to be held May 7, at the Traymore Hotel, Atlantic City, N. J.

AIC—ACS Liaison Representatives

In accordance with the recent agreement between the American Chemical Society and the AIC to exchange liaison representatives (See The Chemist, December 1958, page 505), the ACS has appointed Dr. Frederick D. Rossini, of the Petroleum Research Lab., Carnegie Institute of Technology, Pittsburgh 13, Pa., to attend the AIC National Council meetings.

Dr. Johan A. Bjorksten, F.A.I.C., of Bjorksten Research Laboratories, Madison 1, Wis., has been appointed by Dr. Emil Ott, AIC president, to attend meetings of the ACS Committee on Professional Status and to report back to the AIC National Council.

Additional Committee Members

Please add to the Committee on Chapter Activities the following additional members: D. H. Killeffer, P.O. Box 443, Clearwater, Florida, and Dr. John M. O'Neill, 139 Cloverdale Drive, Huntsville, Alabama.

Amendment to the Constitution

A proposed Amendment to the Constitution is being mailed to Fellows (which includes Emeritus Fellows, Life Members, and Honorary Members) in April. This amendment would permit Associates to vote in elections and on other matters except on amendments to the Constitution. Please return the Ballot on this Amendment promptly.

New Delaware Chapter Officers

At the Charter meeting of the new Delaware AIC Chapter on January 19, the election of the following officers was announced: Chairman, Dr. Walter W. Thomas of Hercules Powder Company: Chairman-elect, Dr. William H. Jobling of E. I. du Pont de Nemours & Co.; Secretary, Dr. Stephen D. Bruck, of E. I. du Pont de Nemours & Co.; Treasurer, Dr. Joseph Iannicelli of E. I. du Pont de Nemours & Co.; Chapter Representative to the National Council, Dr. Walter W. Thomas, Three councilors for the Delaware Chapter's Council were also chosen: Dr. Joseph E. Wilson of Atlas Powder Company, and Dr. Arthur C. Stevenson and Dr. Paul Lipsitz, both of du Pont.

Comment Requested

It has been suggested that the AIC membership base be enlarged by adding two new classes of members:

 Students. Students in chemistry and chemical engineering.

Affiliates: Individuals, not chemists or chemical engineers by professional training, but actively associated with the chemical industry in some capacity or who are supporting our objectives and who wish to be affiliated.

Both of these groups would be non-voting classes of membership.

The Committee on Chapter Activities will be happy to hear from those who share these views, as well as from those who disagree. Please send your comments to the chairman of the Committee: Martin B. Williams, 700 Ward Ave., N.E., Huntsville, Alabama.

Election Ballots

Election ballots will be mailed to Fellows and Members of the AIC early in April. A president-elect and three councilors are to be chosen this year. The names on the election ballot were selected by Fellows and Members who voted on the Nomination Ballot in March. Please return Election Ballots promptly.

To All AIC Members

You will soon receive Annual Meeting Programs, reservation forms, and hotel reservation cards, for our 36th Annual Meeting to be held at Atlantic City. The program on "The Chemist and Engineer in the Economy," with its panel of outstanding speakers, is well worth every effort made to attend it. Please send in your reservations early.

A Research Participation Program for qualified Teachers of Physics, Chemistry and Chemical Engineering in the Smaller Colleges will be held at The Pennsylvania State University, June 8-August 7. The National Science Foundation is providing stipend awards for a limited number of participants. For information: Prof. W. C. Fernelius, F.A.I.C., 212 Whitmore Lab., The Pennsylvania State University, University Park, Pa.

Beaver Falls, Tennessee, Wisconsin, San Francisco—Which Will be First?

Martin B. Williams, F.A.I.C.

Chairman, Committee on Chapter Activities

In all of these places there is in-terest in the formation of a new AIC Chapter and/or a sufficient concentration of members to make possible a successful Chapter. The same is true of Northern New England, Connecticut, Pittsburgh, Scranton & Wilkes-Barre, Virginia, North Carolina, Florida, Michigan, the Pacific Northwest, and probably several other spots in the fifty states. (We have members in 48 of the 50. — Montana and Nevada are the two exceptions let's get some members in those two states!) Our Annual Meeting in Atlantic City, May 7, will be an outstanding meeting, and if at that meeting, petitions for 8 new Chapters can be approved, to bring our total number of Chapters up to 25 from the present figure of 17, the Atlantic City meeting will truly be the biggest event in the INSTITUTE's entire history. With YOUR HELP it can be done. IF:

1. You live in one of the areas mentioned, and haven't been asked to participate in the formation of a new chapter, write to Martin Williams, Chairman, Committee on Chapter Activities, 700 Ward Ave., N.E., Huntsville, Alabama, for the

name of the person in your area who is organizing the new Chapter.

2. You live in one of those areas, and have been asked to become a charter member of a new Chapter, but haven't replied to the inquiry, GET ON THE BALL!

3. You are a key man who is getting a new Chapter going, but haven't yet sent your petition to the Secretary of the Institute—DO IT NOW — a petition received in New York five days after the National Meeting ends won't help us meet our goal, while one received five days before the Annual Meeting will, but it would be very nice to get the petition a couple of weeks in advance of the deadline!

4. You don't live in one of those areas, but have friends who do — WRITE THEM!

5. You're busy getting a new Chapter underway, and have submitted a petition since March 15, or definitely will do so in the next few days — GIVE YOURSELF A WELL DESERVED PAT ON THE BACK!

LET'S GET THE JOB DONE!

Public Relations on the Boardwalk

Richard L. Moore, F.A.I.C.

W. R. Grace & Co., 3 Hanover Sq., New York, N. Y. Chairman, AIC Public Relations Committee

IN thirty-six years there are only a few programs in any society that can really be called great. This is one of those years for the INSTITUTE. We really have a great program.

Every member of the INSTITUTE should feel honored that top men in science, government and education will join us May 7 and 8 and give us their views on "The Role of the Chemist and Engineer in Today's Economy".

Here is your chance to do a public relations job for the INSTITUTE. By coming down to breathe the salty and tangy spring air of Atlantic City you can prove that the affairs of the INSTI-TUTE mean something to you.

You know public relations is accomplished by spreading the word. After a speaker has been to a meeting his friends ask him what kind of a meeting it was and just what kind of a group THE AMERICAN INSTITUTE OF CHEMISTS is.

Here is where all of us can step in. By turning out in good numbers we can show our strength and interest and make a lasting impression on all who participate. Let's make people want to spread the word about us.

See you on the boardwalk.

About AIC Members

Dr. Roy C. Newton, Hon. AIC, retires April first as vice president in charge of research of Swift & Company, Chicago, Ill. He will raise beef cattle on his farm near Three Rivers, Michigan.

Dr. Lewis R. Fibel, F.A.I.C., has been appointed to the post of Dean of Students at New York City Community College, Brooklyn 1, N. Y. He was formerly head of the Chemical Technology Department.

Dr. Albert E. Frost, Jr., F.A.I.C., is now with Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y. Dr. William H. Bowman, F.A.I.C., general manager of the Organic Chemical Division of American Cyanamid Co., New York 20, N. Y., announces that Dr. T. F. Cooke, F.A.I.C., has been appointed commercial development manager for the Division.

Nicholas Molnar, F.A.I.C., president of Fine Organics, Inc., announces the consolidation of the executive sales, research and manufacturing divisions of the company at its modern, enlarged quarters at Lodi, New Jersey.

Prof. Emeritus Peter J. W. Debve. F.A.I.C. Nobel laureate, celebrated his 75th birthday on Mar. 24. Since his retirement seven years ago from full teaching at Cornell University, he has continued his consulting work for government and industry and his researches. He reports that his seven years of retirement have been as productive as any of his entire life. He will go to Europe in June and again in October to attend international congresses in Trieste, Wiesbaden, and Berlin, where he will open the meeting of the German Physical Society. He will receive an honorary doctor's degree from the University of Mainz and an honorary engineering degree from the Technical University of Aachen.



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closely with client organizations in performing assigned work through any desired stage of development.

Consultants to Industry **SINCE 1886**

San Francisco . San Juan . Edinburgh

Dr. L. P. Moore, F.A.I.C., president of Cyanamid of Canada, Ltd., announces that Canadian natural gas will replace imported coal in the manufacturing of ammonia and ammonium nitrate at the company's Welland plant. The conversion program will be completed within a year.

Dr. Milton Harris, F.A.I.C., vice president and director of research of The Gillette Co., and president of Harris Research Labs., Washington, D. C., spoke at the February meeting of The Chemical Society of Washington, on "Textiles-Catalysts in the Growth of the Chemical Industry."

Charles L Thomas. F.A.I.C., research director, Research & Development Division, Sun Oil Company, Marcus Hook, Pa., announces that Dr. Abraham Schneider has been appointed research scientist.

John H. Staub, F.A.I.C., treasurer of the Pennsylvania AIC Chapter, recently joined Lansdale Tube Co., a Division of Philco Corp., Lansdale, Pa., as senior project engineer.

Dr. Jack P. Montgomery, F.A.I.C., professor emeritus, organic Chemistry, University of Alabama, was recently honored by having his portrait presented to the university by a group of his former students.

Dr. R. P. Parker, F.A.I.C., is now assistant general manager of Lederle Labs. Division of American Cyanamid Co., New York, N. Y.

(And see page 136)

The Independent Consultant and Independent Laboratory as a Professional Activity

Dr. Foster D. Snell, Hon. AIC

Foster D. Snell, Inc., 29 West 15th St., New York 11, N. Y.

(Presented when the author received Honorary AIC Membership at a dinner sponsored by the New York AIC Chapter, January 8, 1959, at New York, N. Y.)

ONE may look at the independent laboratories as constituting an industry of which the output is pieces of paper. These range from a simple analytical report to a complex bound research report, or a blueprint of an engineering design. That is the viewpoint I take in this discussion of the professional opportunities offered by that industry.

The facetious definition of a consulting chemist is a chemist sitting on a door step waiting for a job. There is an equally facetious one that a chemical engineer is a man who does not know enough chemistry to be a chemist or enough engineering to be an engineer. The famous chemical engineer who coined the latter phrase shortly afterward became a consulting chemical engineer!

The industry being discussed may consist of a few dozen laboratories, or a couple of hundred, or about 25-hundred across the country, depending on where we place the cut-off point in terms of size. In other words, every city of 25,000 or 50,000 has its own local laboratory. Then there are a considerable number of individual consultants. Cynics even say that every professor of chemistry

is also a consultant. I am limiting the definition to laboratories of some size, perhaps about 100, with personnel of ten or more people each.

The existence of such independent laboratories is purely an American institution, including Canada. There are almost none in other countries.

A considerable number of the independent laboratories are primarily testing laboratories. Thus their function is to see that the contractor in highway construction uses the proper mix of concrete, or they serve as intermediary between buyer and seller as to the quality of an item. Others are research organizations which compete with the captive laboratory of a company for its research appropriations. A captive laboratory is owned by and generally serves only one firm. Some captive laboratories compete with the independent laboratories for government contracts.

Many of the larger independent laboratories are joined together in the American Council of Independent Laboratories, which I define as being a trade association, though some people do not like the term. From a standpoint of laboratory administration, the problems of a research laboratory and a testing laboratory are much the same. Therefore, in that Council we share experience on business matters, such as the amount of floor space required per employee or the dollar income per unit area, or the problems of internal and external communication.

There is a good reason why I picked a personnel of ten as a cut-off point. Any management study comes up with the same answer that the Romans had in their legions. Each person should be directly responsible for no more than ten people, preferably for less. Therefore, when you get beyond ten people in a properly organized laboratory, you have multiple groups. Practically speaking, those groups differ in no essential feature from the research or development groups which are the basis of the organization of the captive laboratory. But there is a difference in character. To strike the contrast, the captive laboratory persuades the officers or the board of directors to appropriate annually some sum of money. It may be as little as \$50,000. Perhaps it was Maurice Holland who said that was an absolute minimum and an undesirably low one. From there, the sums range up to the multi-millions of dollars which are appropriated by the large chemical corporations each year. Whatever the appropriation, it is then cut up into pieces for individual projects.

The subject of many conferences has been the management of research and how to appraise results. Actually they can only be appraised over a considerable period of time, and the rubber yardstick used by the director of research and by top management is not at all the same.

The independent laboratory has basically the same financial structure. There are various appropriations for various projects, the difference being that they come from different sources rather than from a uniform source. But there another difference steps in.

Accounting-wise, the independent laboratory has all of its costs on each project in such form that one can balance them against the results. It must have — for billing purposes. Some captive laboratories do, but many do not. The concept that I am presenting that laboratory operation constitutes an industry is not at all fanciful. I quote from an address of E. Duer Reeves, of Esso Research & Engineering Company, given several years ago:

"I think the day is fast approaching when industrial research will produce technology as an industrial product in its own right. As this day approaches, industrial research will become more and more a separate industry creating an important raw material under highly competitive business conditions.

"It seems evident to me that as time goes on a greater and greater share of our technology will be provided by independent research organizations not attached to specific industrial concerns. These independent research organizations by competition amongst themselves will establish the competitive market value of various form of technology and our present 'captive' research organizations will remain in business only to the extent that they can compete with the independent groups and do an even better job. This will tremendously increase our capacity to make new discoveries and provide technical solutions to an everbroadening field of problems."

I hold the same opinion. I am trying to be more specific in view of my own experience. In practical terms, the best clients of the consultant and the independent laboratory are the large organizations which have their own laboratories.

The relation of the independent laboratory to laboratories maintained by industry can be simply described as both parallel and analogous to the relation of the independent legal firm to the legal staff of a company. The company furnishes its requirements for professional service with its salaried employees up to a point; beyond that point outside professional services are preferable. This is best established by illustrations.

In the purchase of oils, cottonseed, and many other materials, the price is based on oil content, protein content, free fatty acid, etc. The seller may be unwilling to have the buyer make the analysis and pay on the basis of this analysis. The buyer may be equally averse to having the seller determine the quality of the product being sold. Large commercial laboratories are devoted almost entirely to

the furnishing of data in response to such needs.

Firms abroad are making large purchases of chemical materials in the United States. The purchase contracts usually call for the chemical to be sampled at the point of shipment by a specific commercial laboratory and certified to be of the quality specified. Mistakes can occur, such as a shipment of caustic soda grossly contaminated with sodium chloride, or a shipment of an organic chemical which contained none of the material specified. The other day we found a shipment of ether which was 90% water-soluble. It was ethanol denatured with ether. The purchaser pays the bill for the independent laboratory to protect him.

The management of a company recognizes the need for research at a given stage in their development. The company is still small. They do not feel able to invest an initial \$25,000 or more in a research laboratory and equipment. They do not want to set up a payroll of \$25,000 plus for research. And the overhead costs of a small laboratory operation are necessarily much higher in proportion than for a large laboratory. They retain the services of an independent laboratory for one, five, or ten years before the installation of their own research laboratory is justified. Thereafter, independent laboratory often serves as advisor for a period of years. An association of modest size runs a

cooperative program for its membership. It can install a research laboratory. More commonly the funds available for such research are allocated to an independent laboratory.

A large company has no bacteriological department and is not sure that it needs one. A new product which they are bringing out requires bacteriological research and control. An independent laboratory conducts that for months or years. If the field grows with that company, it then installs a bacteriological laboratory. If it does not grow, or the product is abandoned, they have not invested a substantial sum in a laboratory which they no longer need and made the concomitant investment in fitting into their organization personnel which will now have to be released.

A company, large or small, needs occasional use of specialized equipment. The use is not sufficient to justify the space and investment to own the equipment and the training of personnel to operate it. Samples are sent out. The last I knew, the General Electric Company had Norma-Hoffman Bomb Tests on greases done by an independent laboratory. Other large companies contract research, not just testing.

A company with both control and research laboratories has a temporary overload. Rather than to equip for short-term use, such work is sent out. A company has a knotty problem which its personnel have not the ex-

perience to solve. It is sent to an independent laboratory known to have specialized knowledge in the field. A company requires ideas for guidance and amplification of its research program. It calls in a mature person from an independent laboratory to attend its research conferences. There are many other specialized cases.

Reference has been made to parallelism between the chemical and legal professions. At the next stage they approach each other closely. Litigation arises, as it will. Perhaps the matter is a claim for product liability: perhaps it relates to the cause of a fire or explosion; perhaps it is concerned with the allegation that the company is infringing a patent or a claim that a competitor is infringing one of theirs. It is the almost universal practice in such cases to use an independent laboratory because of its dissociation from the management of the company. The outside laboratory is remote enough from the problem to get a more disinterested point of view. Courts give more weight to results from the independent laboratory.

Finally we come to the gist of the topic — the pay-off. How does the professional man fare in the consulting and independent laboratory as compared with his financial return in industry? The Los Alamos scientific laboratories of the University of California have for twelve years collected increasingly comprehensive statistics.

The 1958 Survey, off the press only

a short time, covers 82,539 non-supervisory salaries of 353 companies, and 15,586 supervisory salaries of 347 companies. They are not identified by individual or company, but the companies who furnished the statistics are listed as an appendix. The data are broken down into hundreds of tables and graphs, 225 pages of them with 3 tables on many of the pages.

The data are probably slanted a little. They show that in general small organizations pay less than larger organizations and the tendency is surely to miss more of small companies than of the large. Many small organizations with captive laboratories are absent, but I miss only one large organization that I know. So the figures may tend to be a little high.

Approximately two-thirds of those covered are in industry. The balance are in the independent laboratories, the research institutes, or are employed by Atomic Energy Commission contractors, or Government laboratories. They are broken down to show subdivisions of private industry, sections of the country, laboratories according to the number of employees, and the type of degree the man has. I once figured out that if compensation was the sole objective, a man should get a job with a petroleum company having a laboratory of 50-100 employees located in the Mountain States.

The data are broken down by the

number of years since a man received his degree and by whether his position is rated as supervisory or nonsupervisory. There are supplementary data which are collected by the Sandía Laboratory and also by a Government contractor. Both check closely with the American Chemical Society surveys for the years in which those are made, but the ACS surveys are not made every year.

I shall give you ten representative figures to make my point as to how the professional working for the independent laboratory fares as compared with all the other possibilities. The mean of all B.S. and M.S. graduates reported in the 1958 survey in non-supervisory capacities is used, because it is the largest group and therefore presumably the most valid statistically. The figure is \$693., a "synthetic" salary for 72,985 people of all Let us see how subdivisions compare with that. The mean for all private industry is \$10 a month more. The mean for AEC contractors is \$21 a month more. The mean for Government laboratories is \$28 a month less. And now here is the payoff figure. The mean for the 1136 employees in this category classed as consultants is \$20 more, within \$1 of the highest of any of the categories mentioned. That is what the record shows.

Just two more figures! The "synthetic" salary, similarly derived, of the B.S. and M.S. in a supervisory capacity has a mean of \$1008 and as a close check on the other figures I gave, the mean for consultants is \$19 higher. There are my ten figures. The consultant is at the top of the scale.

One evidence of the recognition of laboratory operation as an industry appeared in 1958. The American Institute of Management issued the first management audit rating an independent laboratory in terms of the ten factors which go to make up management. The laboratory organization was ours and scored over 80 on a scale of 100.

So, in summary, the consultant and the independent laboratory represent an industry, fulfill a genuine need, and compensation-wise represent a top scale.

Foster Dee Snell — A Dynamic Person

Dr. Donald B. Keyes, F.A.I.C.

Former President, The American Institute of Chemists, Inc. Consultant, New York, N. Y.

(Condensation of a talk presented when Dr. Snell received Honorary AIC Membership at a meeting sponsored by the New York AIC Chapter, January 8, 1959, in New York, N. Y.)

WHILE Foster Dee Snell and I have not been associated with one another except in a few activities, I have seen this great man in action as a member of the War Production Board's famous Chemical Referee Board.

I look back on the meetings of this Board with a great deal of nostalgia. Here was a group organized in the middle of the war to advise the Chemical Bureau of the War Production Board regarding the acceptability of new chemical processes and products. The evaluation of a process in the war days depended not so much on the amount of money involved for the erection of a plant, as on the amount of critical metal necessary for its construction.

We formed the Chemical Referee Board in order to pass on these important matters and especially to evaluate new processes. These problems were presented to us by the Chemical Bureau which was an operating unit, and thus had no time to study and pass judgment on these new processes.

The Chemical Referee Board was a group of twelve distinguished men not connected directly with any one particular industrial concern. They met once a month, usually in New York, as the Washington atmosphere during the war did not prove to be satisfactory for logical thought or discussion. The arguments for and against a particular process were clearly stated in the form of a short report

after the information had been received over the telephone from consultants throughout the country. These reports were sent to the Referee Board a week prior to the meeting.

To give you an idea of Foster Dee Snell's colleagues, we had as members individuals such as Warren K. Lewis of MIT, C. O. Brown and C. R. Downs of New York City. You might imagine that Foster would be intimidated by such individuals who always speak with the greatest of authority, but it was not so. I can still see my friend Foster, when he knew he was right, tearing his opponent apart with a smile and ending the argument with a unanimous vote for his opinion.

Foster is certainly a man of action. Never once in those days did we ask him to tackle anything for us that he didn't agree to do and then start and finish it in the minimum length of time.

Some years after the war, I had the privilege of seeing Foster in action as president of The American Institute of Chemists. I know not how many of you have attended Council meetings of The Institute, but you have never seen the Council effectively operate if you have not seen it with Foster as its presiding officer. No proponent of some silly idea was ever allowed to drone along while the remainder of the Council slept. Foster allowed only so much time per question regardless of its importance

and he demanded a decision one way or another in the allotted time.

Foster decided while he was AIC president that it would be an excellent idea for the AIC to take over the professional activities of the American Chemical Society. Due to his extreme vigor, intelligence, and persuasiveness, Foster almost won his point. If it had not been for academic intolerance and the thought on the part of timid souls in the ACS that Foster might become a powerful autocrat in their society, I am sure he would have won. Perhaps the most interesting result of Foster's defeat was that the American Chemical Society acquired a greater respect for Foster and the AIC and realized for the first time that professional activities are truly important.

When I think of all the things that Foster has done for the chemists of the United States, I am surprised that the first real recognition of his ability and his willingness to help the other fellow came from England in the form of a gold medal. The Government of Great Britain went so far to show their appreciation that they actually permitted him to take the gold medal home. He is perhaps the only man, certainly the only one of my acquaintance, who has obtained actual gold from Great Britain.

How does Foster treat his own men in his own organization? Foster D. Snell, Inc., has no outside stockholders. The employees own the company and Foster has less than 50% of the stock. As he says, "I do not own the company." No bankers, no financial people, and not even do-gooders have been called in by Foster, as yet, to help him organize, develop or maintain his company. When the dividends are paid, they are paid to employees and thus create an incentive for higher quality work.

Please note that our honor recipient almost from the start was an independent person—one who was quite willing to take the gamble and be responsible for his own actions and decisions. We should have more chemists like him instead of the unimaginative souls who go through life pleasing the boss, punching a time clock and following the book. Is it any wonder that Foster D. Snell, Inc., is an outstanding success!

And for yet another reason I think this to be a remarkable moment in the history of the AIC: I recall no other occasion when the honor recipient's wife could have qualified for the same honor, but Foster's wife, Dr. Cornelia Snell, is certainly qualified, and would be probably so honored if she had not married Foster!

Foster Dee Snell

Friend, Teacher, Professional Chemist

Cyril S. Kimball, F.A.I.C.

Executive Vice President, Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y.

(Presented when Dr. Snell received Honorary AIC Membership at a meeting sponsored by the New York AIC Chapter, Jan. 8, 1959, at New York, N. Y.)

BEFORE proceeding, let us define what is meant by the term professional chemist. A review of back issues of The Chemist will prove that in attempting a definition of professional chemist, I am in excellent and illustrious company. Dr. Clifford Rassweiler, in 1957, when he was honored by the New York AIC Chapter, called attention to the definition in Webster's Dictionary and stressed the phrase, "A calling in which one professes to have acquired some special knowledge." He went on to point

out some differences between the "Pro" and the professional chemist which impressed me greatly. His concluding statement was to the effect that the real test or distinction is the extent to which the man recognizes his personal responsibility for the advancement of the profession and the social standing of himself and other chemists. I submit that Dr. Foster Dee Snell is truly a professional chemist according to this or any other definition I have seen.

You will remember how hard and

diligently Foster worked to try to effect a coalition of the AIC and the ACS when he was president of the INSTITUTE. The force or drive behind this effort was his sincere belief in the advancement of all chemists in social standing and their acceptance by the public as professionals.

Some years ago he was the spearhead of a movement to indoctrinate and encourage the legislature of the State of New York to license chemists as professional people. The conviction and the effort behind this endeavor on his part was not political in the usual connotation but rather it stemmed from those attributes which make Foster a professional chemist.

These are but two examples of Dr. Snell's extensive and devoted service to his fellow chemists and the advancement of the profession. He has served the American Chemical Society, both the local section and the national society, as councillor, committeeman and in many capacities, for over thirty years. He has been an officer of the American Oil Chemists Society, chairman of several committees, and continues to serve this organization as representative to the National Research Council. As a member of this latter body he now is chairman of the Fats and Oils Committee.

His work for the Society of Chemical Industry during his long tenure in various offices, from secretary through chairman of the American Section and

vice president of the International Society, is well known. He has been and is active in many other organizations. During World War II he served on the Referee Board of the Office of Production, Research and Development. He currently is a member of the New York City Community College Advisory Board; the Advisory Committee to the State University of New York, Institute of Applied Arts & Sciences, and the Detergents Advisory Committee of the National Security Industrial Association. This long record of voluntary effort and unrequited service to the common good distinguishes the man as a professional chemist.

There is an amusing story connected with his public service as an advisor to governmental agencies. He was requested, by an industry spokesman, to make recommendations to the Alcohol Tax Unit of the Internal Revenue Bureau, concerning appropriate chemicals which might be substituted for brucine sulfate, then in short supply, as a denaturant. He circulated a memorandum to his staff requesting their aid and made up a list of his own. The desired characteristics for the preferred denaturant were that it be readily soluble, non-volatile, relatively non-toxic in the amount required, and extremely bitter and nauseating to the taste. Foster hit upon quinine sulfate as the most similar and logical substitute from a chemical viewpoint. Before preparing a

formal list of suggestions to be sent to the Alcohol Tax Unit, he called the industry spokesman to check the list. This friend pointed out that while quinine sulfate was indeed similar to brucine sulfate in many of its properties, he believed that the Internal Revenue Bureau might have some misgivings about approving such a ready form of concentrated "vodka and tonic."

It has been a pleasure to be closely associated with my boss for almost 33 years. I am still working at my first regular job. When I joined him as a "beaker boy", he was teaching industrial chemisty at Pratt Institute in Brooklyn and as a sideline struggling to establish a consulting business. He was a dedicated teacher and he still is a teacher at heart. Whatever small contribution I may have made to the profession, I owe to Foster. He has been an ever patient and always helpful teacher.

The transition has been from a teacher teaching chemistry to the young in the 1920's to a consultant teaching chemistry and business to older people in the 1930's to the present. To exemplify my point, notices have just gone out covering the publication of the new revised book, Chemistry Made Easy, which he coauthored with his charming wife, and renowned chemist, Dr. Cornelia T. Snell.

A professional chemist has an obligation to further the understanding

of chemistry and science by the general public. That Foster has fulfilled this obligation, witness the publication of the book, Chemicals of Commerce, first in 1939, then revised in 1952, both co-authored with Cornelia, and the original four volumes of Chemistry Made Easy as well as the new revision. In addition to these books written for the layman, there are others primarily for the chemist, the first of which, Colorimetric Methods of Analysis, was published in 1921, revised in 1936, and enlarged to four volumes in 1948, 1949, 1953, and 1954. Here again Foster collaborated with his favorite co-author, Dr. Cornelia T. Snell.

The road to success as teacher, consultant, and businessman has not been easy. Dr. Snell resigned his teaching position at Pratt Institute in 1928 to devote full time to consulting. In 1929 came the Depression. By 1932, with a sizeable staff dependent upon our corporation for a livelihood, we hit rock bottom. Here is where the characteristics of the professional became apparent. While there was not sufficient work for all the staff, the income after expenses was shared on a part time work basis and the staff was maintained. It was during this period that Dr. Snell obtained an education in the scientific approach to business problems.

During the last half of the 1930's the organization grew and prospered. Because of his dynamic enthusiasm, his optimistic outlook, his firm conviction in the need for and place of chemical consultants, and his untiring effort, this growth has continued to the present. The building of this consulting organization, which now employs almost 100 scientific people, is an accomplishment for which Foster can be justly proud.

Inherent in the makeup of the professional man is the desire to acquire greater knowledge and better understanding of fields and pursuits beyond his own calling. The area of business economics and business management is one in which Foster has a great deal of interest. He has a determined and unswerving belief that there is a scientific approach to the problems of everyday life and particularly that this approach is the right way to solve business problems. That he has been actively engaged in affairs of The American Institute of Management and that he serves on the president's council of advisors will be no surprise.

Dr. Snell is considered an expert and is renowned for his work in the field of surface active agents and detergents. He has written more than 60 articles on the subject and holds membership on official bodies concerned with the subject. I would like to lay claim to some indirect credit for this accomplishment. In 1929, I was offered a job opportunity to develop phosphate builders for soap by a predecessor firm of a company which

later became part of Monsanto Chemical Co. I travelled to St. Louis in July for an interview. I was impressed with the offer made and the challenge of the job, but I was fearful of my ability to stand up under St. Louis weather in summer. Returning, I discussed the situation with the Boss who came up with a suggestion, that I try to sell the firm the idea that he and I working together as consultants could do a better job for them. We got the job!

He published his first paper on detergency in 1932. This started a series in which the factors involved in detergent action were developed and discussed. This work, concerned with the detergent contribution of alkaline salts, stressed the value of the alkaline phosphates and to some extent anticipated, if it did not help to promote, the widespread use of alkaline phosphates and the molecularly dehydrated phosphates, first as builders for soaps and later as additives for the heavy duty synthetic detergents now found in practically every household. Not only did his studies elucidate the various factors involved in the complicated process of detergency but they appear to have stimulated investigations by other workers leading to a better understanding.

Dr. Snell showed me a small sample of a synthetic detergent shortly after the first material was brought to this country from Germany before 1930. His interest in them was immediate and enthusiastic and continues to be his major interest in the field of technology. He has been an ardent promotor of the syndets and has visualized applications and improvements which have over the years become realities. In recent years the subject of sugar detergents has been prominent in his technical activities. He holds the firm conviction that some day detergents based on sugar will be the lowest cost detergents available.

Prior to developing an interest in detergency and surface active agents, Dr. Snell carried out much work on the chemical treatment of trade wastes. His first publication on this was in 1925. His interest and activity in chemical treatment of trade waste, although subdued by a greater interest in detergency, continued, and he published papers on the subject as late as 1937.

Another phase of his professional career has occupied much of his time and efforts in more recent years — his work as an expert witness in litigation, much of it patent litigation. He has in some instances received formal recognition by the Court for clear and lucid explanations of technical matters, but more often the recognition is in the form of the printed record of the case and what it shows about the diligent preparation, the sagacity and the understanding of the issues and the technical facts.

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The Very Reverend Laurence J. McGinley, president, Fordham University, in a speech at Clarkson University, stated that "the amateur can make mistakes and ask forgiveness but the professional cannot. Society depends upon the expertness of the professional." Here again, Dr. Snell qualifies as a professional. Perhaps the most outstanding characteristic of this man is his ability to think logically and fast "on his feet." It is this attribute more than others which makes him an expert witness and a professional chemist.

Another characteristic which distinguishes him as an expert is his determination and dedication to the belief that adequate preparation — that is knowing all of the facts and facets of the issues is the heart of the matter, and his most important contribution. It is therefore, understandable that he has designed and had constructed some rather large, special luggage which he uses to convey the mountains of documents, reports, exhibits, and reference papers to the courtroom. An appropriate title was awarded this

luggage by Dr. Ralph Evans, who dubbed it the "Snellephant."

In the forty years since his graduation from Colgate University, Dr. Snell has had a very busy life. But he has not neglected those things which make up the very fiber of the professional chemist. To the contrary, he has rendered long and valuable service to the profession; served youth and the public as teacher and advisor; contributed to our business economy by creating a consulting organization; and he has built up a host of friends on this side of the Atlantic and abroad.

Presentation to Dr. Snell

Dr. Foster Dee Snell, President, Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y., received Honorary AIC Membership at a dinner sponsored by the New York AIC Chapter, January 8, 1959, at the Hotel Shelburne, New York, N. Y.

George F. Foy of the Fine Chemicals Division of Shulton, Inc., Clifton, N. J., and chairman of the New York AIC Chapter, presided. Donald B. Keyes, consultant, New York, N. Y., and former president of the AIC, spoke for Dr. Snell as a Person. Cyril S. Kimball, executive vice president of Foster D. Snell, Inc., spoke for Dr. Snell as a Professional Man. Dr. Emil Ott, vice president, Chemical Divisions, Food Machinery & Chemical Corp., New York, N. Y., and AIC president, presented the Certificate of Honorary AIC Membership to Dr. Snell, who responded with an address on "The Independent Consultant and Independent Laboratory as a Professional Activity." (See preceding pages.)

The citation to Dr. Snell reads:

In recognition of his contributions to the education and training of young chemists and to the literature of analytical chemistry and simplified chemical methods; his encouragement of the professional development of chemists and chemical engineers of all ages, and his adoption of high professional standards in the conduct of his own business.

Harrison C. Blankmeyer, manager of Reinforced Plastics Labs., of Owens-Corning Fiberglass Corp., Ashton, R. I., spoke before the Feb. 26 meeting of the Chicago AIC Chapter, Chicago, Ill., on "When Should I Change Jobs?"

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Dr. J. Scott Long, F.A.I.C., professor, University of Louisville, Ky., presented a paper on "Research Needs That Lie Ahead", at the recent symposium on "Alkyds in Transition," sponsored by the Glycerine Producers' Association in New York, N. Y.

The Rev. Joseph S. McGrath, C.S.C., Ph.D., F.A.I.C., professor and head, Department of Chemistry; dean, College of Science and of the Graduate School; dean of the Faculties; assistant to the president at University of Portland, has been appointed assistant dean of the Graduate School, director of the Summer Session at the University of Notre Dame, Indiana.

Dr. J. J. O'Connell, F.A.I.C., vice president—Marketing, Amoco Chemical Corp., Chicago, Ill., announces that the company's Export Marketing Department has been moved to 555 Fifth Ave., New York 17, N. Y.

Dr. John Scharf, Armstrong Cork Co., spoke on "Effects of a Nuclear Explosion on Packaged Food and Beverages," at the February 27 meeting of the Piedmont AIC Chapter, at Atlanta, Ga.

G. E. Merkle, F.A.I.C., president, Fiske Brothers Refining, Newark, N. J., is a member of the Survey Committee for the National Lubricating Grease Institute to survey the production of lubricating greases for 1958.

David W. Young, F.A.I.C., research associate and assistant to the vice president, Sinclair Research Labs., Inc., Harvey, Ill., presented a paper on "Amide Synthesis" at the national meeting of the AAAS in Washington, D. C. Miss E. Pare, also of Sinclair, was co-author of this report on a new way to make amides.

Dr. Alan Hisey, F.A.I.C., associate professor, School of Chemistry, University of Alabama, has perfected a cylindrical slide rule, offering both accuracy and compactness.

Howard Rosenthal, M.A.I.C., is now secretary of Schaar & Co., 7300 W. Montrose Ave., Chicago, Ill.

(And see page 148)

Better Training of Secondary School Science Teachers

Dr. Walter J. Peterson

Program Director, Special Projects in Science Education, National Science Foundation, Washington, D. C.

(Presented at the 35th AIC Annual Meeting, Los Angeles, California)

THERE has been no other time in our history when so many people have been concerned with the problems of education. There is a revitalized awareness of the importance of the need for better training of our teachers, our potential scientists, and our engineers. The cause for concern is genuine. It is clear that along with other effects, the current situation is causing the greatest reassessment of American education in our times. The real challenge for the coming years is to educational leadership, lay and professional, at all levels, national, state, local. If this leadership is wise, our schools and colleges will fare well.

The problems facing education and the best methods for their effective solution are exceedingly complex, but the key to the quality of education of our youth is the teacher. In order to support excellence in training we must seek methods to improve teachers. The need for competent, dedicated teachers, particularly in the fields of science and mathematics for our elementary schools, our high schools, and our colleges has never been more pressing. I suspect there is

a mounting apprehensiveness, that, in spite of our best efforts, the quality of teaching at all levels will suffer as school enrollments increase. We are somewhat, and perhaps unavoidably, ambivalent in our misgivings. We stress, not too hopefully, the need for considerable increase in the supply of teachers-but we are apprehensive about a deterioration in quality, given that considerable increase. Underlying the entire problem is the need to attract the most capable young minds into the teaching profession. That is to say, we should, hopefully, have the best possible human resources against which to apply improved training techniques.

Although we have all too little information about the academic qualifications of our secondary school science and mathematics teachers, there is increasing evidence that the situation is not at all satisfactory. There appears to be an inadequate number of competent teachers and there are too many high schools in the country with no qualified teachers in the sciences. Among the 160,000 high school teachers of science and mathematics, many are well-trained, full-

time teachers. But a large fraction of the remainder is not adequately trained to present either modern science or mathematics in a way that best serves either the needs of the student or the national interest.

The individual teacher should not bear the sole blame for his shortcomings. For the most part he is the product of his own education, and colleges and universities have, in the past, devoted too little effort to the design of courses and curricula that would truly benefit the potential teacher. Although many teachers received adequate training originally, they have been unable to return to school periodically to keep abreast of new developments. Similarly, many (probably a majority) of those who are well trained in some area of science are having to teach other sciences in addition to their specialty. Then there are those whose training has been primarily in other fields and who have been "drafted" to teach science and/or mathematics on a part-time or full-time basis. Still others, believing themselves well prepared, actually received their instruction in mediocre institutions from teachers who, themselves, were ill prepared or who were apathetic about good teacher-training.

What then are some of the measures which should be taken to improve the effectiveness of our present corps of science and mathematics teachers and assure as well that the teachers of the future will be adequately trained?

The science and mathematics teachers now in service are those who will have the responsibility for teaching our youngsters for a number of years. It is they who will provide the leadership and much of the in-service training for their newly-graduated colleagues. It is of prime importance that these already committed teachers obtain the training which they need.

There is evidence that a large proportion of these teachers are aware of their responsibilities and are eager to improve themselves. This was illustrated dramatically in the spring of 1957 when more than 20,000 teachers submitted applications for attendance at the 96 Summer Institutes supported by the National Science Foundation—one out of every eight high school science and mathematics teachers in the Nation.

We must do all that we can to foster and encourage the continued professional growth of the science teacher. It is to be hoped that all of our school systems stress the desirability and importance of encouraging the teacher to continue his graduate work at regular intervals, or of seeing to it that some sort of in-service training is made available. Only in this way can we assure that the teacher's knowledge of the content of science is updated and accurate.

Not only must we train secondary school teachers of science and mathematics better, but we must also provide them with appropriate tools with which to utilize such training. This problem is perhaps more acute in the teaching of science than it is in other subject matter areas.

The subject matter, organization, and in many instances the theory of the courses offered have often lagged far behind modern scientific development. Educational institutions, large and small, are today experiencing the tensions arising because of the rapidly expanding areas embraced by science. The old adage of knowing less and less about more and more is rapidly approaching the point where for the students, it will be a case of knowing nothing about everything.

We seem to be forced, then, into the position of selecting and emphasizing certain portions of subject matter and neglecting others, of eliminating the outdated and the less significant. Scientists and educators have begun to realize that a new structure is necessary and that it must be redesigned from the ground up. While the need for improvement in the whole field of education is clearly great, there seems to be a special need in the sciences and mathematics.

The National Science Foundation is supporting studies to determine the material necessary to present to high school students for a basic understanding of science. For example, since 1956, the Foundation has contributed substantially to a completely new and

original approach to the teaching of physics in the secondary school. This is being accomplished through the efforts of a large group of outstanding physicists and experienced high school teachers under the supervision of the Physical Science Study Committee, which has its headquarters at Massachusetts Institute of Technology. The Committee is under the direction of Dr. Jerrold Zacharias of the Physics Department of MIT. The course which this group is developing will include films presenting the most effective teachers on various aspects of physics, filmstrips presenting experiments of various sorts, monographs, and teachers' guides.

If the strengthening of present high school teaching of science and mathematics is a proper first line of attack, then the training of new science and mathematics teachers is surely a proper second line. It is doubtful, however, if an increase in the number of courses in science and mathematics would result in better science and mathematics teachers. On the other hand, the provision and requirement of substantive courses in depth. designed for the teacher, would do much to improve undergraduate and graduate programs for the preparation of science and mathematics teachers-especially secondary school teachers. Certainly new, imaginative, and bold thinking about the problem, and new and better programs to meet the need, should be encouraged.

One of the most interesting byproducts of the National Science Foundation's summer and academic vear institutes programs has been their success in encouraging colleges and universities to develop further their interest in the subject-matter education of teachers, as well as in stimulating mutual cooperation between departments of education and of science. Indeed, there is a rapidly growing realization by scientists that they have here a responsibility which they have too long delegated to others. The interest and ready cooperation of our best scientists in these institutes programs suggest that scientists can be persuaded to participate in the design and presentation of new courses and new curricula for prospective teachers. This is a most heartening development. Science teachers must learn to be effective in many ways, but they must certainly have an adequate understanding of what science is. This the institutes strive to provide.

I will not presume to speak specifically as to the desirable characteristics of really effective college curricula for prospective high school science or mathematics teachers. My personal convictions are that the science teachers should have a broad background in all of the basic sciences, with a good degree of specialization in one, and with the requirement that the specialty be in considerable depth.

I hope that the requirements and curricula provided for science teachers by our teacher training institutions will receive thorough and intensive study in the immediate future. By "teacher training institutions," I do not refer to the separate teachers colleges, for I understand that they provide only a fraction-about 20%-of the number of high school teachers we need. It would seem that a fresh approach is needed here: To ascertain the knowledge and kinds of competence required of teachers in a given science at a given level; to think anew about the appropriate distribution of scarce teaching talent among the secondary schools, the colleges and the graduate schools. One of the striking developments of the institute programs of the National Science Foundation is that they are proving to be catalytic with respect to changes in the conventional curricula offered by our colleges and universities for the preparation of teachers.

Once I read something which went about as follows: "The high schools dictate to the university, the parents dictate to the high schools, the children dictate to the parents; the parents comply with the children, the high schools comply with the parents, the university complies with the high schools. It is outvoted!"

It is time that our colleges and universities began to take more pride in those of their graduates who become outstanding teachers. One suspects that there is a climate of opinion on college campuses (and elsewhere) that tends to drive undergraduates away from the teaching profession. If students or faculty have a bias against teaching as a profession, it ought to be traced to its roots and eliminated. Perhaps too, a long look should be taken at professional courses in education, with a view to ascertaining which of them are really a necessary part of the education of a good teacher, and if demonstrably essential, how they can be improved and reorganized.

It is important, too, that in addition to concerning ourselves with the problems of improving the education of students wishing to become teachers, we think about how we might encourage more competent young people to seek education and careers in science teaching. This is at best a complex and confusing problem. Before we can attract the quality and number of teachers into the profession that we must have, the profession of teaching will have to be given the status it deserves. Financial attractiveness is one factor. Respect and appreciation is another. We must recognize that career students will be concerned with the status and rewards that the profession holds within the culture.

There is no need to have any illusions about the matter—as long as other professions offer better salaries and better opportunities for future advancement, the students trained for the teaching profession will accept work where the financial rewards are greater. Good teachers will not remain in the profession unless our society as a whole gives more thought than it has done to the problems of recognition and compensation. Certainly teachers at all levels have been, and are, ill-paid; and it is a tribute to the dedication and devotion of our teachers that their morale is as good as it is.

Speaking of morale, I might mention simply the difficulty qualified and eager teachers have in learning and keeping abreast of new developments, because of inadequate time, heavy teaching loads, overcrowded classes, committee work, too much clerical work, and other extracurricular duties.

Now, may I reflect on our younger generation, as a parent and as a classroom teacher. I have thought often on the elements of our easy days and times that appear to have removed the necessity of effort; effort-and very great effort at that-being necessary for attainment of distinction in the modern world. While many things are studied, few are studied thoroughly. Time is not taken to get to the heart of the matter. Concentration, however, is the price the student has always paid for success. One sometimes has the impression that the classrooms and laboratories have become the formal and compulsory side of life for our students, while a score of lesser activities have become the vital, spontaneous, absorbing realities. Perhaps we do not need to abolish or even subordinate the sideshows, but we can certainly put them into their natural place as diversions and oust them from their present dignity.

Woodrow Wilson in a delightful essay, "What is College For?," in Scribner's Magazine, Nov. 1909, speaks aptly to this problem as he answers the question (and he might well have said "What Is High School For"):

"It must release and quicken as many faculties of the mind as possible and not only release and quicken them but discipline them also by outting them to systematic labor. Work, definite, exacting, long continued, but not narrow or petty or merely rule of thumb, must be its law of life for those who would pass its gates and go with its authentication."



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Communications

Philosophy and Actions

To the Editor:

The quotation from the speech of Rear Adm. H. G. Rickover, "A Possession Forever" (THE CHEMIST, March), was worthwhile in recording the true motivation of many professional men. As the Rear Admiral indicates, the possession of specialized knowledge actually imposes on the expert an obligation to use his knowledge for the good of others.

At this time of vet another German crisis, one is reminded of the words of Fritz Haber, the father of gas warfare and whose timely, or untimely invention of the synthetic ammonia process is thought to have been an important factor in prolonging World War I for three years. In 1937 E. Berl wrote (J. Chem. Ed. 14, 203. 1937): "The writer knows from Haber's own lips how much he detested war and the horrors connected therewith . . . In 1915 he placed his services completely at the disposal of his people, whose government, 19 years later, rewarded him with such base ingratitude."

One is tempted to think that Haber's actions spoke so loudly that we could not hear what he said. There was a place for Einstein in the postwar world, but none for Haber. Divorcing one's philosophy from his actions actually amounts to nothing less than professional schizophrenia.

-Dr. Garth L. Putnam, F.A.I.C. Seattle 33, Washington

ACC&CE Is Proud of its Members

To the Editor:

The recent honoring of Dr. J. W. E. Harrisson, F.A.I.C., and Dr. Foster Dee Snell, F.A.I.C., by Chapters of the AIC, and the recent death of Jerome Alexander, Hon. AIC, have called attention to the independent chemical consultant in the profession of chemist. The consulting chemical profession notes with pride that both Dr. Harrisson and Dr. Snell chose aspects of the consultant's work as the themes for their award addresses.

While many professional men look at consulting as an interesting, attractive and romantic way to make a living, very few chemists succeed in establishing themselves in independent practice. The Association of Consulting Chemists and Chemical Engineers, which serves the chemical consultant in his unique professional problems, has only 118 members, which is an insignificant number in comparison with the AIC and an invisible number when compared with the A.C.S. or the profession as a whole. We consultants are therefore proud of the attainment and recognition of our two distinguished members and our eminent colleague and deceased member, Jerome Alexander, who with other consultants have worked in the interest of the profession.

Often chemists and chemical engineers in independent practice are unaware that there is a professional association to serve them, just as many of our colleagues in chemistry are unaware of the activities and accomplishments of the AIC for the chemical profession as a whole, I would therefore like to call to the attention of Members and Fellows of the AIC that the Association of Consulting Chemists and Chemical Engineers is interested in serving those of our profession who are, or wish to be, independent consultants. We welcome inquiries from professionally qualified chemical consultants, and ask them to work with us to raise the standards and promote the interests of independent consulting practice.

> -Emerson Venable, F.A.I.C. Membership Chairman, ACC&CE, Inc.

Give Associates a Vote in National Elections!

To the Secretary:

At the National Council meeting held at the Annual Meeting in Los Angeles last April, I proposed an amendment to our Constitution to allow Associates to participate in the annual balloting for National Officers and Councilors-at-Large. I felt then, and feel now, that giving our Associates (who make up about 15% of our total membership) a voice in AIC affairs would naturally cause them to

take a greater interest in the INSTI-TUTE; that a much larger percentage of our Associates than is now the case would become members and then Fellows, and that they would interest their friends in AIC membership.

Even now, with no voice in our national affairs, many of our Associates are extremely active in their Chapters, and make up in enthusiasm and initiative what they lack in experience. I believe the passage of this amendment will be of benefit to our Associates and to the INSTITUTE. A two-thirds vote of the Fellows is necessary to amend the Constitution, and I sincerely hope that our Fellows will vote FOR the proposed amendment when they receive their ballots in April.

-Martin B. Williams, F.A.I.C. Huntsville, Alabama

On The Importance of Professional Cooperation

To the Editor:

In the course of perusing recent books on nuclear resonance spectroscopy, it became desirable to see what Isaac Newton had to say on precession of rotating bodies. There came to light a peculiar instance of lack of cooperation, due to professional jealousy.

Newton had invented the first reflecting telescope in 1668. In 1685, Picard had made an exact determination of the terrestrial radius, and Newton became engaged in the laborious task of proving that his formula was exact for the attraction of gravity between two bodies.

John Flamsteed was astrologerastronomer royal to Charles II of England. Having predicted the accession of Charles II to the throne, Flamsteed was given a royal warrant in 1675 to rectify the tables of the heavenly bodies, and the Greenwich observatory was built the next year.

Newton found that Flamsteed's observations were indispensible to the perfection of the lunar theory. But Flamsteed, perhaps doubting the security of his position under Charles II. would communicate them only partially and reluctantly, so that the annovance involved in trying to obtain the data caused Newton, after seven embittered years of contest, to abandon his pursuit of the moon's irregularities. Had Newton been able to obtain the scientific facts then known. many of the present day solutions of the moon's motion would have been advanced by about two centuries.

—Dr. John A. Steffens, F.A.I.C. Suffern, N. Y.

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Interesting and Timely

To the Editor:

The acceptance address by Dr. Bernard S. Friedman upon his receiving the Honor Scroll of the Chicago AIC Chapter, as reprinted in the February 1959 Chemist, is extremely interesting and timely. I would like very much to reprint this article in either the April or May issue of *The Del-Ghem Bulletin*, the local section publication of the Delaware Section of the ACS . . .

-K. L. Seligman, Editor The Del-Chem Bulletin

On "Understanding the Creative Process"

To the Editor:

Many thanks for the reprint on "Understanding the Creative Process" (by Dr. Maurice J. Kelly, a series in The Chemist, 1957-8). I had not seen it. It is an excellent abstract. May I call attention to it in my next issue of *Ideas*? It is exactly what others in this field are looking for . . .

-I. Bruce Buckler
Endicott, N. Y.

For Chairmen of Non-Eastern Chapters Only!

To Whom it May Concern:

To save time, expense and mockery: If only Eastern Members are qualified to hold office in the AIC, then confine it a little more and allow only cross eyed, red haired members of New York's No. 1 Chapter, who live in Fifth Story Apartments facing West, to be officers.

(Editor's note: The above anonymous communication was found in a ballot envelope. We would like to call the attention of the author to the fact that the nomination ballot did conain the names of nominees from the South, the Middle West, and the Far West, though there were more names from the Eastern seaboard area. The Chairman of each Chapter is a member of the Committee on Nominations. Chapter members may request their chairmen to nominate local members at next year's election.)

Looks Forward to Chemist

To the Secretary:

THE CHEMIST is the journal I look forward to reading, cover to cover, each month.

—William H. Tonkin, F.A.I.C. Mission, Kansas

Misuse of Scientists

Some of the surveyed firms argue that the real problem is not the shortage of scientists and engineers, but the misuse of this human resource. Due to the acute shortage of technicians and technical-scientific assistants in industry, the highly skilled professional is often reduced to the role of Food & Drug
PROBLEMS

Pharmacological Sacteriological CHEMICAL

a mere clerk or menial laborer in reality.

-From "American Industry's Scientific-Technical-Executive Needs," Hoff, Canny, Bowen & Associates, Inc.

The first national Youth Conference on the Atom will be held in Atlantic City, N. J., at the Claridge Hotel, April 30—May 1, to discuss with high school science students and teachers the peaceful uses of nuclear energy. The program was arranged by Electric Companies Public Information Program, 2 W. 45th St., New York 36, N. Y.

Arthur H. Thomas Co., Philadelphia 5, Pa., received the Second Annual Pyrex Sales Achievement Award, presented to the president, Edward B. Patterson, by Amory Houghton, Jr., staff vice president of Corning Glass Works, Feb. 18.

The Health Physics Society will hold its fourth Annual Meeting June 18-20, 1959, in Gatlinburg, Tenn. For information, G. T. Saunders, Kewaunee Manufacturing Co., Adrian, Mich.

Professional Appointments

- Apr. 2, 1959. Pittsburgh, Pa. Fairfax Dining Room, 4614 5th Ave., Pennsylvania Chapter Meeting. Social Hour 6:00 p.m. Dinner 6:30 p.m. Meeting 8:00 p.m. Chairman, Dr. Delbert F. Jurgensen. Speaker, Dr. Emil Ott, AIC President, "Professional Obligations of the Chemist." For reservations (Dinner \$3.00. Reservation deadline Mar. 26): Dr. Erle B. Ayres, Callery Chemical Co., 9600 Perry Highway, Pittsburgh 37 (FOrest 4-1130), or Dr. John H. Nair III, Mellon Inst., 4400 5th Ave., Pittsburgh 13 (MAyflower 1-1100).
- Apr. 2, 1959. Huntsville, Alabama. Dales Restaurant, So. Memorial Parkway (U. S. Highway 231). Alabama Chapter Dinner and Meeting. Social Hour 6:00 p.m. Dinner 7 p.m. Panel Discussion, 8:00 p.m., on "Schools and the Chemist." Moderator: Art Raeuber, Head, Plastics & Polymers Section, Southern Research Institute, Birmingham. Panel: Dr. Emmett B. Carmichael, Head, Dept. of Biochemistry, Medical College, University of Alabama; J. H. Vaughan, Head, Science Dept., Huntsville High School; Gene Zerlaut, Research Chemist, Army Ballistic Missile Agency, Redstone Arsenal.
- Apr. 6, 1959. Boston, Mass. Statler Hilton Hotel, Bay State Room. AIC Social Hour held in connection with the 135th National meeting of the ACS. 5:30 p.m., preceding the Gordon Research Conference dinner. For information: Dr. J. Horace Faull, Jr., 72 Fresh Pond Lane, Cambridge, Mass.
- Apr. 7, 1959. Atlanta, Georgia. Emory Alumni Building. Piedmont Chapter meeting, 6:30 p.m. Speaker, Mrs. Annie Sue Brown, recipient of Atlanta's Woman of the Year in Science Award. Subject, "Science Education in the Atlanta School System." For information: A. J. Shingler, The Coca-Cola Co., P.O. Drawer 1734, Atlanta 1, Ga.
- Apr. 14, 1959. Washington, D.C. O'Donnell's Sea Grill, 1223 E. St., N.W. Washington Chapter. Luncheon 12:15 p.m. Speaker: Dr. Amos G. Horney, Director of Material Sciences in the Air Force Office of Scientific Research, "Opportunities for Chemists in the Air Force." The talk will be followed by a color film, "Material Sciences—Key to Progress."
- Apr. 16, 1959, New York, N. Y. The Chemists' Club, 52 E. 41st St. New York Chapter meeting. Social Hour 5:30 p.m. Dinner 6:30 p.m. Address 7:30 p.m. Speaker: Earl Ubell, science editor, New York Herald Tribune. Subject: "Community Recognition—How the Chemist Can Achieve It." (To be discussed: Professional responsibility of the successful chemist. Public relations techniques for obtaining recognition. Working with editors . . . with others who contribute to the chemist's recognition. Benefits to the chemist . . . to the profession . . . to society.) Reservations: (Dinner \$4.90. No charge to those attending address only), Robert R. Dean, Westvaco Chlor-Alkali Div., 161 E. 42nd St., New York 17, N. Y. (MU 7-7400).
- Apr. 21, 1959. Newark, N. J. Military Park Hotel. New Jersey Chapter. Annual Awards Meeting. Social Hour 6:00 p.m. Dinner 7:00 p.m. Program 8:00 p.m. Presentation of Honor Scroll to Dr. Vlon N. Morris, F.A.I.C., former Research Coordinator, Johnson & Johnson. Student Awards. Presiding: Dr. L. T. Eby of Enjay Co., Inc. Speaker: Dr. William O. Baker, Vice President for Research, Bell Telephone Labs. Subject, "Federal Science and Technology in the U.S.A." Dr. William H. Lycan, Vice President of Johnson & Johnson, will introduce Dr. Morris. Faculty sponsors from New Jersey Colleges will present students. All AIC or ACS members, their ladies and guests, students and faculties of colleges, and friends of Dr. Morris, are welcome. For reservations (dinner \$7.00): Dr. John F. Mahoney, Merck & Co., Inc., Rahway, N. J. (FUlton 1-5000, Ext. 3254); or Dr. Harold R. McCleary, American Cyanamid Co., Bound Brook, N. J. (ELliot 6-2000).
- May, 1959. Wilmington, Delaware. Delaware AIC Chapter meeting. Details to be announced.

May 5, 1959. Kansas City, Missouri. Massman Hall, Rockhurst College, 53rd and Troost. Midwest Chapter. Dinner 6:30 p.m. Meeting 7:30 p.m. Speaker, Dr. Vanston H. Ryan, Chairman, Department of Natural Sciences & Mathematics, Rockhurst College. Subject: "Science and Education." All AIC members, their families and friends are cordially invited to attend. Reservations: Daniel J. Sullivan, 1522 Holmes St., Kansas City 8, Mo.

May 6, 1959. Atlantic City, N. J. Traymore Hotel. The AIC President's Reception to the Officers, National Councilors, Members of the Annual Meeting Committee, and their wives. 5:30 p.m.

May 6, 1959. Atlantic City, N. J. Traymore Hotel. Belvedere Room, 11th Floor. Meeting of the AIC Board of Directors and Council. 6:30 p.m.

May 7-8, 1959. Atlantic City, N. J. Traymore Hotel. Thirty-sixth Annual AIC Meeting. Theme: "The Chemist and Engineer in Our Economy." The New York and New Jersey Chapters will be hosts.

May 14, 1959. Philadelphia, Pa. Engineers' Club, 1317 Spruce St., Philadelphia, Pa. Pennsylvania Chapter. Student Award Night. Dinner 6:30. Student Awards, 8:00 p.m. Lecture, 8:30 p.m. Speaker: Dr. Egbert Mason Kipp, Director, Research & Development, Foote Mineral Co., Berwyn, Pa. Subject, "The Professional Chemist in Industry." For reservations, Dr. W. E. Langeland, Wyeth Institute, Radnor, Pa. (MUrray 8-4400).

May 19, 1959. Linden, N. J. Esso Refinery. New Jersey Chapter Plant trip. Tour begins at 3:00 p.m. Advance reservations and registration required as number for tour is limited. Business meeting and dinner to follow tour. For details: Dr. Stephen E. Ulrich, Chairman, Program Committee, Rutgers University, New Brunswick, N. J. (CHarter 7-1666). For reservations: Dr. John F. Mahoney, Merck & Co., Inc., Rahway, N. I. (FUlton 1-5000, Ext. 3244).

Rahway, N. J. (FUlton 1-5000, Ext. 3254).

May 28, 1959. New York, N. Y. Hotel Shelburne, 37th St. & Lexington Ave., New York Chapter. Honor Scroll to be presented to Dr. Maurice J. Kelley, F.A.I.C. Social Hour 5:30 p.m. Speakers to be announced.

June, 1959. Niagara Falls, N. Y. Niagara Chapter Meeting. Date and details to be announced.

May 11-13, 1960, Minneapolis, Minn. Radisson Hotel. 37th Annual AIC Meeting. The Twir. City Chapter will be our host.
 May 11-12, 1961, Washington, D. C. Statler Hotel. 38th Annual AIC Meeting.

The Washington Chapter will be our host.

Dr. Eduard Farber, F.A.I.C., consultant, Washington 16, D. C., spoke recently before the American Goethe Society, in Washinton, D. C., on "Nature—Philosophy in Goethe's Time."

Dr. Robert E. Hulse, F.A.I.C., executive vice president of National Distillers and Chemical Corp., and general manager of its U.S. Industrial Chemical Co. Division, announces that the new U.S.I. polyethylene plant at Houston, Texas, has started production.

Dr. Chris A. Stiegman, F.A.I.C., is technical director of the new Research Center, Hooker Chemical Corporation, just opened at Grand Island, N. Y., near the corporation's head-quarters at Niagara Falls.

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Dr. Emil G. Klarmann, F.A.I.C., vice president in charge of technical services for Lehn & Fink, Inc., New York 22, N. Y. was presented with the Achievement Award of the Chemical Specialties Manufacturers Association, in New York, N. Y., December 10th.

Dr. Wallace R. Brode, science advisor to the Secretary of State, addressed a joint meeting of the New York AIC Chapter and the New York Section of the American Chemical Society, in New York, February 6.

John B. Calkin, F.A.I.C., president, Calkin & Bayley, Inc., New York 17, N. Y., announces that Dr. Sebastian B. Littauer has been appointed consultant in Operations Research and Statistical Quality Control.

Dr. Junius F. Snell, F.A.I.C., of the Radio-Chemical Research Labs. of Chas. Pfizer & Co., Maywood, N. J., recently developed a process for the production of radioactive Terramycin, Tetracyn, and Aureomycin.

The name of the Missile Systems Division of Lockheed Aircraft Corp. is changed to Lockheed Missiles and Space Division, with headquarters at Sunnyvale, Calif.

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